



TECHNICAL GUIDANCE  
NOTE 19

**Approved Document L1B 2006**

A Guide to Compliance When Designing A  
**Change of Use to a Dwelling**

(Revised version October 2006)



**Introduction**

Approved Document L1B provides guidance on complying with the requirements of Regulation L1 dealing with the conservation of fuel and power. It is one of four Part L Approved Documents and deals specifically with work to existing dwellings.

This guide has been produced by the Herts Building Control Technical Forum (HTF) to help you to understand Part L1B of the building regulations as applicable to schemes involving a change of use to a dwelling. This includes garage and loft conversions. It has not been possible to deal with every issue in full detail and you are very welcome to contact your local authority Building Control office for further advice on any aspect. A separate guide is available dealing with extensions to dwellings.

**Scope**

The document outlines the energy performance standards required for 'Thermal Elements'. These are walls floors or roofs that separate the heated space from the external environment or from unheated spaces such as garages. The four types of thermal element are '*new*', '*replacement*', '*renovated*' and '*retained*' and all may be relevant to a change of use

The document also gives guidance on the specification of '*Controlled Fittings*' such as windows, doors and roof lights and '*Controlled Services*' such as lighting, heating, mechanical ventilation and air conditioning.

## New Thermal Elements

Where a scheme involves the construction of all new elements (i.e. not replacement), the U-values should meet the standards in the Table 1 below

Element	Table 1	U-Value
Wall		0.30 W/m <sup>2</sup> °K
Pitched Roof – insulation at ceiling level		0.16 W/m <sup>2</sup> °K
Pitched roof – insulation at rafter level		0.20 W/m <sup>2</sup> °K
Flat Roof or Roof with integral insulation		0.20 W/m <sup>2</sup> °K
Floors		0.22 W/m <sup>2</sup> °K

To help designers, the Herts Technical Forum has updated its **Technical Note 10** (U-Values of Elements). This suggests a variety of specifications using commonly available insulation materials.

## Windows, Rooflights and Doors

The standards for these have been raised in the new Part L and new methods of rating are now considered. Window Energy Rating Bands are introduced and 'centre-pane' U-values. Where the work involves the fitting of new windows, doors or rooflights in the external walls, they should meet the standards in Table 2 below.

Any existing unit that does not achieve a U-value less than 3.3W/m<sup>2</sup> °K should be replaced (although see *Historic Buildings* below) with units meeting the standards in Table 3 below. The values given are the required area weighted averages. All units must be draft proofed.

Table 2 - Energy Ratings and U-values for New Windows, Doors and Rooflights

Fitting	Standard
Windows and Rooflights	Maximum 1.8W/m <sup>2</sup> °K <u>or</u> Window energy rating band D <u>or</u> Centre-pane U-value maximum 1.2W/m <sup>2</sup> °K
Doors with more than 50% of their internal face area glazed	Maximum 2.2 W/m <sup>2</sup> °K <u>or</u> Centre-pane U-value maximum 1.2W/m <sup>2</sup> °K
Other Doors	Maximum 3.0W/m <sup>2</sup> °K

Table 3 - Energy Ratings and U-values for Replacement Windows, Doors and Rooflights

Fitting	Standard
Windows and Rooflights	Maximum 2.0 W/m <sup>2</sup> °K <u>or</u> Window energy rating band E <u>or</u> Centre-pane U-value maximum 1.2W/m <sup>2</sup> °K
Doors with more than 50% of their internal face area glazed	Maximum 2.2 W/m <sup>2</sup> °K <u>or</u> Centre-pane U-value maximum 1.2W/m <sup>2</sup> °K
Other Doors	Maximum 3.0 W/m <sup>2</sup> °K

You can find typical compliant specifications for fittings in the HTF Technical Note10.

## Replacement Thermal Elements

Where roofs, walls or floors are rebuilt as part of a scheme, L1B gives the following standards to be met

Table 4 – U-Values for Replacement Thermal Elements

<b>Element</b>	<b>Maximum U-Value</b>
Wall	0.35 W/m <sup>2</sup> °K
Pitched Roof – insulation at ceiling level	0.16 W/m <sup>2</sup> °K
Pitched roof – insulation at rafter level	0.20 W/m <sup>2</sup> °K
Flat Roof or Roof with integral insulation	0.25 W/m <sup>2</sup> °K
Floor	0.25 W/m <sup>2</sup> °K

### **Renovated Thermal Elements**

This is a new control introduced by L1B and requires the upgrading of performance in thermal elements where the developer proposes to renovate more than 25% of the surface area. This would typically be work to the inner or outer lining of an external wall, re covering of a roof or renovation of a ceiling. Re decking a floor would also be applicable.

The required standards are shown in column (b) of Table 5 below. An exception to the need to upgrade performance is where the upgrade is not technically or economically feasible. The document describes a method of assessing economic feasibility by calculating the 'simple payback period' or the amount of time it would take for energy cost savings to exceed the basic cost of upgrading the thermal performance. The section below dealing with historic buildings gives other exceptions.

### **Retained Thermal Elements**

These are thermal elements that exist in the building subject to a change of use and that the designer intends to retain. L1B requires that such walls, roofs and floors be upgraded if their U-value fails to meet the 'threshold value' in column (a) of Table 5 below. The target values for improvement are listed in column (b) however the exceptions rules on feasibility apply equally to this type of thermal element. If the upgrade is not technically or economically feasible then the designer should try to achieve the best standard that is possible within the criteria in the previous paragraph.

Table 5 – Upgrading U-Values of Renovated and Retained Elements

<b>Element</b>	<b>(a) Threshold Value</b>	<b>(b) Improved Value</b>
Cavity Wall (suitable for the installation of cavity insulation)	0.70 W/m <sup>2</sup> °K	0.55 W/m <sup>2</sup> °K
Other Wall	0.70 W/m <sup>2</sup> °K	0.35 W/m <sup>2</sup> °K
Pitched Roof – insulation at ceiling level	0.35 W/m <sup>2</sup> °K	0.16 W/m <sup>2</sup> °K
Pitched roof – insulation at rafter level	0.35 W/m <sup>2</sup> °K	0.20 W/m <sup>2</sup> °K
Flat Roof or Roof with integral insulation	0.35 W/m <sup>2</sup> °K	0.25 W/m <sup>2</sup> °K
Floors	0.70 W/m <sup>2</sup> °K	0.25 W/m <sup>2</sup> °K

### **Controlled Services (Heating and Hot water)**

The new rules aim to ensure that new systems meet a minimum standard of energy efficiency. The designer can establish the adequacy of a system by referring to the 'Domestic Heating Compliance Guide' published by TSO and NBS. This is a lengthy and highly detailed document giving standards for many types of heating system, fuel and controls. A typical specification for a natural gas fuelled system would be a boiler with a SEDBUK (efficiency) rating of at least 86% (i.e. condensing type) linked to a fully pumped system with boiler interlock (switches off when no demand for heating) and zone, timing and temperature controls. There are different requirements for dwellings with floor areas over 150m<sup>2</sup>.

L1B requires that every new system is commissioned by a person competent to do so and that the owner is provided with sufficient written guidance to enable him to operate the system efficiently.

### **Controlled Services (Lighting)**

The guidance on new internal lighting systems in change of use schemes is that the number of energy efficient fittings is not less than one per 25m<sup>2</sup> of floor area (excluding garages) or part thereof or one in every four fittings whichever is the greater. Energy efficient lighting is classed as fittings that only take lamps having a luminous efficacy greater than 40 lumens per circuit-watt. It is generally only fluorescent or compact fluorescent fittings that meet this standard. Fittings in cupboards or similar areas do not count towards the total.

External lighting must either meet the above efficiency standard or must consist of fittings that have movement and daylight sensors and lamp capacity not exceeding 150 watts.

### **Other Controlled Services**

L1B places controls on the efficiency of mechanical ventilation systems by referring to the Energy Saving Trust's design guide GPG268 – Energy Efficient Ventilation in Dwellings. Fixed air conditioning systems are required to have an energy efficiency rating of Class C.

### **Construction Standards**

Irrespective of the quality of materials used, there is a major potential for heat loss and cold bridging caused by poor standards of construction in terms of airtightness and the continuity of insulation. This is particularly critical where older buildings are converted into dwellings so it is important for the designer to ensure that the various insulated elements in a building are carefully detailed at junctions. Uncontrolled air leakage can be minimised by specifications calling for appropriate levels of sealing and the TSO Robust Details guide 'Limiting Thermal Bridging and Air Leakage' suggests suitable details for achieving this with typical methods of construction.

### **Historic Building Conversions**

There is provision in the Approved Document to take account of the building's architectural or historic importance in applying the requirements and for listed buildings this may be mandatory. Whilst a designer should strive to achieve the best possible energy efficiency, he must ensure that measures are sympathetic to the existing fabric and appearance. Building Control is able to organise joint consultations with Planning Conservation Officers to discuss and agree such issues.